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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,633

01/31/2006

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EXAMINER

MILLER, DANIEL H

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

12/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,633	Applicant(s) KAZAHAYA ET AL.	
	Examiner DANIEL MILLER	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/26/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-8, 14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Phillips (US 5,571,615).

Phillips teaches a cement carbide substrate having a diamond film coating having a grain size of less than about 0.5 microns; within applicant's claimed range (abstract, and claim 2). The diamond coating has a thickness of greater than about 10 micrometers (column 4 lines 50-60). The reference discloses a superior smooth surface (see comments on figures), but does not specifically disclose the claimed surface roughness. However, given that the diamond film has a substantially similar thickness and grain size and is produced via CVD methods, similar to applicant's disclosed method, therefore would be expected to have substantially similar surface roughness. In the alternative; it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a low surface roughness diamond film by employing known processing conditions for diamond films in order to obtain a surface roughness as low

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as possible; including a surface roughness less than 0.2 microns, as claimed, since a smooth diamond surface is highly desired by Phillips.

Regarding claims 2-8 and 14 and 16, Phillips discloses a superior smooth surface (see comments on figures) produced via a CVD process, but does not specifically disclose the claimed surface roughness. However, given that the diamond film has a substantially similar thickness and grain size and is produced via CVD methods, similar to applicant's disclosed method (see embodiments in the instant specification); the diamond film would be expected by one of ordinary skill to have substantially similar physical properties and characteristics as claimed. It is not clear that there are any processing conditions that are different between Phillips and the instant claimed invention that would produce differing characteristics.

In the alternative; it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a diamond film of the claimed crystal structures and orientation known in the art which have high aspect ratio within applicant's claimed range (i.e. columnar structures having high aspect ratios). It further would have been obvious to provide any desired thickness including a single crystal thicknesses, and an optimized hydrogen content by varying the processing time and other processing conditions (i.e. pressure; as taught by Phillip see column 4 regarding CVD processing) in order to obtain a diamond film ideal for particular applications limiting the hydrogen content, consistent with hydrogen contents' effect, known to one of ordinary skill, on the physical properties of the diamond film. No patentable distinction is seen.

Regarding claim 4, it is noted that to the extent to which the term is definable the grain shape is considered to "form like" a Japanese Cedar plant.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (US 5,571,615) in view of Kembaiyan et al (US 2004/0060742).

Phillips teaches a cement carbide substrate having a diamond film coating having a grain size of less than about 0.5 microns; within applicant's claimed range (abstract, and claim 2). The diamond coating has a thickness of greater than about 10 micrometers (column 4 lines 50-60). The reference discloses a superior smooth surface (see comments on figures), but does not specifically disclose the claimed surface roughness. However, given that the diamond film has a substantially similar thickness and grain size and is produced via CVD methods, similar to applicant's disclosed method, therefore would be expected to have substantially similar surface roughness.

Kembaiyan teaches a tungsten carbide body containing cobalt and chromium binder material [0023]. Further, the carbide body has a diamond layered face covering the body [0025]. The Cobalt binder can be present between 2% and 12% of the body (see claim 10 ref.); overlapping applicant's claimed range. The tungsten carbide is present at least 80% of the body in some embodiments and from 30% to 99% dependent upon the embodiment (see claims 2 and 25-27 ref). Therefore, the disclosed ranges overlap applicant's claimed ranges of each material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a carbide body, as taught by Kembaiyan, and optimize the level of cobalt and chromium binder within the ranges disclosed by Kembaiyan (above) to within the corresponding levels claimed by applicant in order to provide the most effective tool body having the most advantageous physical characteristics (i.e hardness and wear resistance).

Response to Arguments

3. Applicant's arguments filed 9/26/2008 have been fully considered but they are not persuasive.
4. The 112 rejection has been withdrawn due to cancellation of claim 4.
5. Applicant has not established by any evidentiary showing that there is a difference between the art of record and that of the instant invention, and has offered only attorney argument. Applicant has pointed to a difference in processing techniques between the art of record and the instant invention that includes carburization of the

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substrate in the instant invention. However, both substrates are carbides and it is not clear that the step pointed to by applicant creates a distinctly different product. Further, applicant has not addressed the 103 portion of the 102/103 rejection.

6. Finally, applicant's arguments are non-commensurate in scope with the claims. Applicant has not claimed a "double crystal structure" but has instead claimed a "aggregation of diamond fine grains" it is not clear that the two are the same or that they even encompass overlapping structures. While it may be that there are some differences between the disclosed structure and the art of record, it is not clear that there is a difference between the claimed structure and the art of record; applicant has established neither case. Further, as stated above, the obviousness of the claimed structure has also not been argued. Rejections maintained.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MILLER whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel Miller/
Examiner, Art Unit 1794

/KEITH D. HENDRICKS/

Supervisory Patent Examiner, Art Unit 1794